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Electronic Commerce Customer Relationship Management: A Research Agenda

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Abstract. In this paper, we approach electronic commerce Customer Relationship Management (e-CRM) from the perspective of five research areas. Our purpose is to define a conceptual framework to examine the relationships among and between these five research areas within e-CRM and to propose how they might be integrated to further research this area. We begin with a discussion of each of the research areas through brief reviews of relevant literature for each and a discussion of the theoretical and strategic implications associated with some CRM technologies and research areas. Next we present our framework, which focuses on e-CRM from the five research perspectives. We then present a theoretical framework for e-CRM in terms of the five research areas and how they affect one another, as well as e-CRM processes and both performance and non-performance outcomes.

Keywords: electronic Commerce Customer Relationship Management (e-CRM), research agenda, markets, business models, knowledge management, technology, human factors

Introduction

Electronic Commerce (EC), coined by Kalakota and Whinston [1], continues to be a significant, pervasive issue for both enterprises and customers. Furthermore, they articulated EC as being comprised of three relationship types: those between enterprises and customers; those between and among enterprises; and those internal to enterprises. In this paper we focus on relationships between enterprises and customers. However, it should be noted that a significant amount of research in traditional *Market Channels* has been done and is underway (see [2–9] for examples).

Fundamentally e-CRM concerns attracting and keeping *economically valuable* customers and repelling and eliminating *economically invaluable* ones. Keen [10] asserts we are on the threshold of a shift from a transaction-based economy to a *relationship-based economy*. The increasing importance of fostering and managing customer relationships in EC is the motivation for this paper.

Based on our two previous studies [11,12], we suggest that there are five major non-mutually-exclusive e-CRM research areas: e-CRM markets; e-CRM business models;

Table 1
Research areas by medium [12].

Research area medium	Markets	Business models	Knowledge management	Technology	Human factors
Conference	112	118	68	180	171
Journal	78	75	35	121	99
Total	190	193	103	301	270

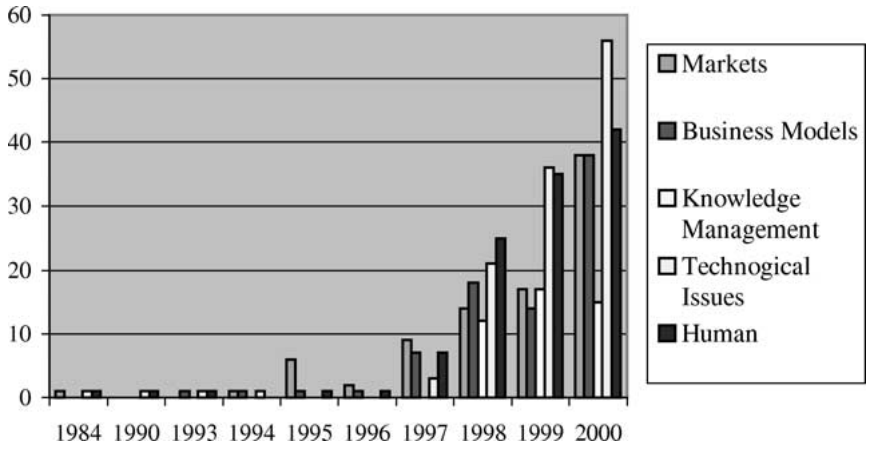

Figure 1. Journal research areas by year [12].

e-CRM knowledge management; e-CRM technology and e-CRM human factors. Each major area is composed of minor ones, due to the complexity and richness of e-CRM issues researchers are currently studying and that we assert need to study in the future. In our assessment of e-CRM research [12] we classified 369 e-CRM articles in terms of each of the five research areas that applied. The results shown in table 1 reveal two important characteristics of this large body of e-CRM literature.

First, table 1 illustrates that each of these five research areas is discussed within a large percentage of the papers in the body of e-CRM literature. This lends support to our assertion that these are important areas to the e-CRM research community at large. Second, table 1 illustrates the relative popularities of the five research areas and thus reveals potential gaps where additional research may be warranted. The most popular area was technology, with 301 of the 369 (82%) papers. The second most popular topic was human factors, with 270 of the 369 (73%) papers. Next in popularity were the topics or business models (193, 52%) and markets (190, 51%). The least popular topic was knowledge management (103, 28%) [12]. Clearly knowledge management is an area that warrants further e-CRM research.

In our research assessment [12] we also coded the papers by year and medium to look for trends in the five research areas. Figure 1 illustrates that the numbers of journal publications in each of the five research areas has been steadily increasing, again

lending support to the idea that these are important and emerging areas for the e-CRM IS research community. Figure 1 also reveals that the areas of technology and human factors have increased dramatically, while the other three are increasing at slower rates. Again this suggests where there might be gaps in the research and opportunities for additional research. Further, the dramatic rise in papers addressing technology along with concomitant rises in the other areas underscores the need for e-CRM IS research. The trends were very similar for conference publications as well over the same time period [12].

The remainder of this paper is structured as follows. Next we discuss and explain each of the five e-CRM research areas though a brief literature review and discussion of some CRM technologies in key areas and their theoretical and strategic implications. Then we present our overall conceptual framework and our theoretical framework of e-CRM influences. We then present some potential research questions in each area. We then discuss e-CRM research evaluations and assessments from the perspective of mixed-methods. Finally, we offer some concluding remarks about e-CRM research.

1. Research area 1: e-CRM markets

At its heart EC involves markets, which Williamson [13] explains serve as mechanisms to *allocate resources among participants*. Forbes and Rothshild [14] assert that the Internet is not merely a media form and a communication method, but is itself a *marketplace instrument*. Currently market resources are allocated via transactions. Traditional transactions may be thought of in three phases: information phase, agreement phase, and settlement phase [15]. Selz and Schubert [15] offer a continuous transaction phase model that uses communication to connect multiple transactions across time, thus establishing relationships *among customers* and *between customers and business enterprises*. All three EC transaction phases involve e-CRM issues that have yet to be thoroughly explored. The communication phase, which links transactions across time, offers a rich area for collaborative e-CRM research. EC markets that use the Internet or other platforms to allocate resources among participants provide one component of the overall framework. For example, Allstate Insurance Company [16] recently announced an integrated e-CRM system that combines marketing-campaign management, sales-lead management, and call-center applications. Each application has been implemented and is currently running. The goal is to integrate them to enable leads generated by one channel (i.e., the company's web site or call center) to be swiftly routed to the marketing system or to a specific sales representative for action.

The basic research issues for markets involve how best to integrate e-CRM systems so they interact both effectively and efficiently. In addition, there may be cultural challenges and or work flow issues that need to be studied. e-CRM must begin to draw on theory and strategies from other disciplines such as marketing and economics [17] in order to deal with the rising demands of customers in their expectations for quality,

service, privacy, and communication with businesses [133] as well as developing its own IS-based theories and strategies.

E-commerce has led to new market structures and IS researchers and practitioners alike must consider these changes from theoretical, strategic, and technological perspectives. Prior to the rise of Internet-based E-commerce CRM was considered an indispensable tool for gaining market share [18–20]. Relationship building and management have become principal modern marketing approaches in both research and practice [18,19] as the paradigm in marketing strategy has shifted from *Marketing Mix* to *Relationship Marketing* (RM) [8]. The RM paradigm encompasses many concepts including strategic alliances, brand loyalty, personal/social relationships, customer partnering in product development, database management, and electronic media to actively interact with consumers [21–27]. RM emphasizes building relationships that lead to customer retention, in juxtaposition to traditional transactional marketing, in which increasing and maintaining market share are the primary aims [8,18,19,28,29].

e-CRM researchers must take theories into account that address exchanges between buyers and seller. For example, Dwyer and Shurr [18,28] distinguish between two types of exchanges: Discrete transactions – typically a one-time purchase lacking relational elements; and Relational exchanges – grounded on dyadic expectations of future transactions. It is the latter that e-CRM must concern itself with most; however another important strategic issue will be to determine which customers want each type of exchange [20], so that resources are not wasted on those that prefer transactions and those that prefer relationships are not lost due to failure to fulfill such wants. Relational exchanges are theorized to follow a linear developmental process with five non-discrete phases:

(1) awareness,

(2) exploration (including attraction, communication and bargaining, power and justice, norm development, and expectation development),

(3) expansion,

(4) commitment,

(5) dissolution [30,31].

e-CRM researchers must explore whether the theory behind such a phased approach generalizes to E-commerce environments in general, or whether it applies only for specific products, industries, or other factors.

Another important component of markets for e-CRM researchers to pay attention to in terms of theory and strategy is the shift in power from seller toward consumers [32,33]. This shift in power provides many new benefits for consumers as well as new demands. For example designers of e-CRM systems may now have to "balance" the requirements of vendors and consumers [34], something quite different than IS of the recent past. e-CRM systems may have to include specialized features for consumers

such as consumer decision support systems [35–37], secure and trustworthy transaction mechanisms [38–46], to name a few.

e-CRM systems integration will change the way the work is accomplished and how relationships are established and managed over time. There are a number ways in which e-CRM systems integration will affect work and relationships. e-CRM systems integration is leading to new distribution and processing capabilities that affect customer attitudes toward industries, and remove geographic and cost barriers to world-wide distribution of goods and services; this results in a convergence of key benefits sought by consumers across the globe [47–51]. This requires organizations to develop new strategies to build and maintain effective and consistent world-wide brand images [51–55]. Integration will also mean that other factors such as logistics and rapid delivery of products, information, and services [56–58], cyber-intermediation [59–65], must be considered from strategic and theoretical perspectives.

As Whiting [16] points out, in the Allstate case, the call centers are focused on efficiency and are judged on call throughput. When the integrated e-CRM system is in place the call center workers will become revenue generators by turning calls into sales leads and cross-selling opportunities. This one example, from among many, clearly illustrates that e-CRM markets present a rich area for future research.

2. Research area 2: e-CRM business models

Peter Keen [10] questions whether the "e" or the "c" in 'e'lectronic 'c'ommerce should be capitalized for emphasis. Keen [10] stresses the "c" as taking center stage and asserts that what lies behind the technology of DOT COM interfaces, such as order fulfillment, organizational business processes, and incentives, must be exploited by enterprises to remain competitive. Keen asserts that much more is needed beyond the *right* web site to be competitive, but also admits that it is not very clear just what that something else is. Keen [10] suggests that the result has been a shift from using the term *strategy* to talk about how to do business in the digital economy to using the term *business model*, Keen offers six *value imperatives* he asserts are vital for companies to execute:

(1) *Perfect one's logistics*: supply chain management; operating resource management; win–win trading partner collaborations and electronic out-tasking.

(2) *Perfect one's long-term customer relationships*: repeat business generation; customer self-management; community collaboration; massive cross-selling and lifetime relationship-focus.

(3) *Harmonize one's channels*: "seamless" links between the Internet, call centers, and physical channels; and strengthening distribution channels, while simultaneously strengthening your own brand.

(4) *Build a powerful portal/hub brand*: incentives for customers to routinely "park" on sites; aggressive customization and personalization; and revenue generation through hosting and selective use of give-it-away-free.com.

(5) *Transform capital and cost structures*: move toward negative working capital; slashing general selling and administrative costs; leverage cash flow generation on minimal physical balance sheet "assets"; reduce cost of capital by building a price/vision premium in market evaluation; and use the valuation advantage to buy needed capabilities at low capital dilution

(6) *Build value-adding intermediation*: provide a hub with reliable information and advice to link buyers with sellers; offer more efficient transaction processing between trading partners; and build win–win relationships along an entire business chain.

These imperatives involve developing a business model that stresses e-CRM, however little is offered as to *how* to meet these challenges. Research into alternative EC business models and the e-CRM components of such models is needed to develop descriptive, prescriptive, and predictive frameworks.

Körner and Zimmermann [66] suggest an e-CRM perspective they call the *Management of Customer Relationship in Business Media* (MCR-BM)-concept. They [66] define the concept as "*The Management of Customer Relationship in Business Media comprises the design, development and application of holistic concepts in order to manage relationships to economically valuable current or future customers*". The MCR-BM concept [66] considers electronic markets through open platforms, based on Klose's [67] media concept, as typical business media that provide independent agents with environments in which to create and exchange value as goods and services. They assert that their MCR-BM concept therefore offers a basic framework for the design of business models to meet the challenges posed by the digital economy. The MCR-BM model consists of seven interrelated building blocks listed below with some key associated issues:

(1) *Customer interaction*: informational content and channels; value-added through non-standard information; pull and push mechanisms; customer communication channel choice.

(2) *Customer added value*: mass customization and personalization; economic incentives.

(3) *Customer profiling*: collection and analysis of customer information; value-added exchange for information.

(4) *Trust: strong branding*; sensitive use of customer profiles; security precautions.

(5) *Virtual communities*: information exchange about products and interests; market segment profiling.

(6) *Processing*: cuts across blocks from 1 to 5; internal and external; interface and ease of use.

(7) *Controlling*: cuts across all other blocks.

Their multidimensional approach focuses on the customer as an *equal member* within a certain business community, rather than being the end-node of a value chain. This

focus on the customer places CRM at the core of EC business models. Their concept is designed to measure e-CRM within EC enterprises, and thus it offers guidance for researchers to explore e-CRM business models along several dimensions.

The business press abounds with articles concerning limited success rates of e-CRM projects [68,69]. These articles suggest that companies fundamentally misunderstand their information; that is what data they have and where it comes from. This is not unlike the classic paper by Ackoff [70], management misinformation systems, wherein Ackoff argues that the problem is not that managers suffer from a deficiency of relevant information, but that they more often suffer from an excess of irrelevant information. Even more important is that Ackoff [70] stresses that managers need to understand information systems in order to be able to evaluate and control them through their managerial competence and expertise.

It goes deeper than this; fundamental business models are being challenged and sometimes obliterated to make way for new ones [10,55,71–73]. One company, student connections [74], altered its business model from providing discount cards to college students to collecting annual fees from its members and charging business partners for advertising their services on its web site or e-mail campaigns. An e-CRM solution now supports the company's effort to better understand how its products are being used and to maximize ROI on marketing opportunities. According to Deck [74], student connections fundamentally re-thought what data they were colleting and storing. For example, telephone numbers were not needed since students frequently change them; neither was Information Service Provider data since students mostly use school computing facilities.

These two proposed *frameworks* for building EC business models both suggest e-CRM as a central theme and offer a number of areas yet to be thoroughly explored through IS research and development. EC business models and the associated processes to provide back-end support behind the customer interface provide a second component of our overall conceptual framework.

3. Research area 3: e-CRM knowledge management

Internet EC enables new data gathering strategies; such as intranets, extranets, customer knowledge discovery algorithms, web-spiders, cookies, online registration and purchasing, and avatar-populated virtual trade shows, to name a few. These strategies generate huge amounts of data, however Upson et al. [75] suggest that much of it is useless without scalable methods to collect, analyze, process, and understand it. e-CRM Knowledge Management (KM) methods need to be explored and refined so enterprises can take full advantage of the data they collect and transform it into useful information and value-added knowledge for themselves and their customers.

Swan et al. [76] found issues of *People Management*, rather than IT development, pose central KM constraints. They assert there has been an over-emphasis on IT management in KM literature and that KM requires a skillful blend of people, business processes and IT. They assert that their findings imply a central role for people management issues within KM. Some of the issues raised in their paper that are relevant to e-CRM include:

commitment, trust, culture, and the social-embeddedness of knowledge. The latter has important implications for e-CRM, because unlike information, knowledge is embedded in the meanings and understandings of people and knowledge creation occurs in the process of social interactions [76–83]. This illustrates the importance of relationships, shared understandings, and attitudes and behavior related to knowledge formation and sharing within groups. Managing customer relationships within social interactions for knowledge creation may emerge as a critical area within EC.

The problem is that companies have a much greater ability to collect customer information than to provide meaningful value in return [84,85]. In Europe, where privacy laws are stricter than in the US, there is a strong desire by consumers to receive value in return for divulging information [86–93]. Research into e-CRM KM will be critical in resolving the developing conflict between EC consumers and businesses.

Many organizations build data warehouses consisting of customer data (demographics on customers and potential customers), customer activity (buying and browsing activity), and product data (product line information and performance) and call this KM. In essence KM is a process that consists of transferability, aggregation and sensemaking [94]. One important point is to find ways to leverage the information contained in the data warehouse and turn it into value. Nunamaker et al. have argued for the new concept of Intellectual Bandwidth of an organization as "*its ability to bring knowledge to bear on the task at hand. It is the product of the organization's ability to assimilate available information, and the ability of its available people to collaborate. Information technology and collaborative technology both can enhance the Intellectual Bandwidth of the organization. This model assumes the availability of significantly more information than an individual could reasonably assimilate*" [95,96]. KM, in terms of elicitation, collection, processing, analysis, understanding, and the return of value to customers provides a third component of the overall framework that needs to be studied further.

4. Research area 4: e-CRM technology

Keen [10] stressed that technology is important in EC and the preferred medium is voice. New technologies will soon change the way customers interact with business enterprises and other customers in EC relationships. Virtual environments [97–102] are being developed to support interaction and information exchange through integrated communications channels that simulate real world interactions and relationships. Researchers in Finland and Hong Kong are working with Nokia on small palm top devices for EC [103]. Which new interface and device technologies will emerge as the winners, and which will fail miserably, may depend heavily on issues related to e-CRM. Several studies have looked into how interfaces affect online consumer behavior and the results have been mixed. As new technologies emerge for mainstream use in EC it will be important to assess their efficacy in relation to e-CRM.

Parasuraman and Grewal [104] suggest that technology is likely to be the major force in shaping customer interactions in the future. They also recommend several key research questions:

(1) What will be the effects of technology on service quality (reliability, responsiveness, assurance, empathy, tangibles)?

(2) How will demographics interact with technology?

(3) Is customer loyalty altered when interacting with technology compared to employees?

The number of current technologies for internet-based e-CRM is growing rapidly. Romano et al. [105] identify some 20 different technologies that could be used for e-CRM (see table 2). They [105] also develop an RM and CRM IT classification scheme from the consumer's perspective based on how consumers communicate to develop and maintain relationships via three specific levels of participation along a continuums ranging from passive to interactive. They define three types of RM and CRM technologies as passive, active, and interactive, based on the role the consumer plays in the communication process [105]. Further research is needed to explore how these specific technologies and the three levels affect and mediate e-CRM.

Table 2
Emergent technologies for e-CRM (adapted from [105]).

Passive
Cookies
Chat rooms
Bulletin boards and fan clubs
Mailing lists
News groups
Observation studies through virtual reality and simulated environments
Product-related discussion groups and lists
Active
Chat rooms (hosted by Seller)
Bulletin boards (hosted by Seller)
Forums (hosted by the Seller)
Internet surveys
Product-related discussion groups and lists
Recommender software
Interactive
E-mail
Forums
Online focus groups
Interactive online interviews
Survey panels
Auctions
Online trade shows
Shopping agent

While this list is not exhaustive, and does not include the richer media technologies such as audio and video, it is illustrative of the large number and types of technologies that are available for e-CRM research and practice. Some of the same theories that applied to the human factors, and discussed in detail in that section of the paper, aspects of e-CRM also apply to the technology choices and strategies. Clearly there is conceptual, theoretical, and practical research in the area of e-CRM technologies that remains to be carried out.

Further research into technology associated with e-CRM will reveal new knowledge that will help both customers and businesses engaging in EC. The consideration of these and other technologies as they are related to e-CRM offers the fourth framework component.

5. Research area 5: e-CRM human factors

Behavioral, affective, and attitudinal factors should play a major role in e-CRM. A number of studies have looked at many different human factors related to e-CRM (see [110–118] for a few examples). This may be turn out to be the richest and most interesting area for research in e-CRM. Group Support Systems (GSS), computer-supported cooperative work and other research areas have shown that computer-mediation has changed the way humans interact with one another when they are working together [119,120]. From the customers point of view EC changes how humans interact to spend money and acquire value in return. This area will require new and different research methods and questions.

The behavioral aspect of e-CRM deals with virtual communities and interactions among customers and between customers and enterprises. Dyson [121] has suggested that scale economies may be less important on the Internet and advertisers have suggested that there is no difference between a little kid and a major corporation if they both have a web site. Gallaugher [122] questions the conventional wisdom that size doesn't matter on the Internet and finds that consumers want to join sites with the largest communities in order to benefit from the interaction and exchange of information. The issues of customer behavior in EC are becoming more complex as applications increase in functionality and more markets go online. Bellman et al. [123] found that typical marketing demographics were not good indicators of online buying behavior. There are a large number of behavioral factors to be explored in relation to e-CRM.

The affective component of e-CRM relates to what Selz and Schubert [124] describe as an emotional customer experience. Customer emotional experiences can be either positive or negative in directionality. The emotional experience will have effects on a number of issues central to the human component of e-CRM such as: satisfaction, trust and confidence, commitment, willingness to interact and share information, willingness to purchase, and attitudes and opinions. The customers affective experience will play a major role in e-CRM and needs to be explored along a number of dimensions.

Attitudes and opinions are extremely important in relation to e-CRM. Ho and Wu [125] explain that Cyber Shopping Stores (CSS) present and even sell to customers *virtual products*, which they need not have in inventory, by displaying only images. The web offers opportunities to market products through multimedia presentation capabilities such as animation, audio, and video. Such complex multimedia stimuli are perceived through the senses differently than verbal and written communication stimuli. Giner-Sorolla et al. [126] assert that interpretation of evaluations as responses to most stimuli in the environment necessitates presentation of stimuli similar in form to objects perceived through the senses. Romano et al. [127] demonstrated that new techniques can enable marketers to gather customer information anonymously through free form comments. Understanding how consumers think and feel about products, companies, and brands at a very detailed level may provide competitive advantage in EC markets. Measuring attitudes and opinions in EC will require new techniques and instruments and there is a great deal of research yet to be done in this area.

One critical area involves trust, risk, and privacy. Trust is not a new concept and all business transactions require some level of trust to be completed [27]. However, trust becomes significantly more important in electronic sales channels and it has been argued that this importance will continue to increase [128]. While a number of models have been developed to classify trust in electronic commerce environments [41,129–141], little actual testable theory has been developed. e-CRM researchers may need to consider theories from referent disciplines such as the "Commitment-Trust Theory of Relationship Marketing" [27] or develop more robust, testable IS theories that go beyond classification and typology.

5.1. Commitment-trust theory of relationship marketing

This theory implies the Key Mediating Variable (KMV) model of Relationship Marketing (RM), which focuses on one party in the relational exchange and that party's relationship commitment and trust. It hypothesizes that relationship commitment and trust are key constructs, and positions them as mediating variables between five important antecedents (relationship termination costs, relationship benefits, shared values, communication, and opportunistic behavior) and five outcomes (acquiescence, propensity to leave, cooperation, functional conflict, and decision-making uncertainty). What is unique about the theory is that it takes a cooperative perspective, rather than the more competitive perspective that most of the work in relationship marketing assumes. Business ethicists have also stressed that competition actually required cooperation:

> "However competitive a particular industry may be, it always rests on a foundation of shared interests and mutually agreed-upon rules of conduct, and the competition takes place not in a jungle but in a society that it presumably both serves and depends upon. Business life, unlike life in the mythological jungle, is first of all fundamentally *cooperative*. It is only with the bounds of mutually shared concerns that competition is possible. And quite the contrary to the everyone for himself metaphor, business almost always involves large cooperative and mutually trusting groups, not

only corporations themselves but networks of suppliers, service people, customers, and investors." (Emphasis in original) [142]

This theory may offer useful guidance for the development of IS-based theories for e-CRM or it may prove not to be generalizeable beyond traditional marketing environments. Clearly both trust and commitment will be important variables and constructs for e-CRM researchers and practitioners to consider in terms of IS design and implementation.

Firms that move into e-CRM must consider a number of different technologies, policies and strategies concerning trust including: organizational privacy policy [111,143,144], third party privacy seals [38,145] (e.g., TRUSTe), information disclosure seals (e.g., WebTrust Seal), reputation and brand building activities, guarantees, return policies, reliability seals, security seals (e.g., VeriSign), and site quality [128,137]. Determining what roles each or any of these will play in e-CRM and which ones will be successful for building trust and commitment in relationships will require a significant amount of research.

Interactivity is also another area that is becoming important for e-CRM market research and practice. This involves communication between consumers and businesses and among consumers. This may be where the most interesting and exciting new technologies arise. While there has been suggestions for research into interactivity, some models developed, and studies of various factors undertaken by both IS and marketing researchers [21,36,146–155], little solid testable theory has been developed and few existing theories have been applied. e-CRM might benefit from using theories such as *Habermas' Communicative Theory of Action* [106,107], and *Social Presence Theory* [108,109]. Each of these is briefly discussed in terms of explanation and how e-CRM research might benefit from employing the theory.

5.2. Habermas' communicative theory of action

This is one of several Critical Social Theories [106,107] of communication richness that serves as an alternative perspective from the traditional positivist Information Richness Theory (IRT) [156] and the occasionally employed interpretivist perspective [157,158]. What differentiates CST from the other two perspectives is that the communication receiver can critically reflect on the content of the message and thereby analyze and detect distortion [106,107]. CST may provide better explanations of the relative effectiveness of different communications media [107]. For e-CRM researchers and practitioners alike alternative theories, such as CST, offer ways to study communication media in context and thus explore additional variables such as personal involvement, product types, prior consumer knowledge, and interactions among contextual factors that the other two perspectives do not [107]. The ability to study communication in context may lead us to consider and discover alternative strategies for e-CRM that might otherwise be overlooked or too easily dismissed.

5.3. Social presence theory

Social Presence (SP) refers to the degree to which media enable a communicator to establish a "personal connection" with others, clearly something that could lead to an improved relationship. SP is operationalized through the use of semantic differential scales along a continuum from sociable, warm, and personal to unsociable, cold, and impersonal [159]. Different media types, such as a letter, telephone, multi-speaker audio, video, and face-top-face support different levels of SP [109]. Media that are "high-presence" will be rated by participants in communication exchanges toward the social end of the SP continuum, while those that are "low-presence" will be rated toward the unsociable end [159]. Rice [108] has asserted that differences in the level of SP media can support may be linked to limitations the media place on communication of non-verbal cues. This is an area where e-CRM researchers can explore how different media and different uses of the same media affect how consumers feel and think about the nature and quality of their relationships. Experimental and observational studies of the level of SP could help to determine which strategies are best for relationship development and management under certain conditions and in certain markets. This is a rich area for e-CRM research.

Finally in such a rich communication and interaction environments is might be that qualitative approaches such as Action Research (AR) [160–163], and may provide useful insights into e-ECRM interactivity. Each of these is briefly described.

5.4. Action research

AR is "*a spectrum of activities that focus on research, planning, theorising, learning, and development . . . a continuous process of research and learning in the researcher's long term relationship with a problem*" [160]. AR also usually involves the processes of "improvement" and "involvement" [164]. AR IS research that employs AR typically involves researcher intervention in an organizational core business process to improve the process and to generate novel and pertinent knowledge from the experience [165]. There are two different "versions" of AR: "classical" and "emergent". Lau [161] describes the two as follows: classical AR focuses on changing information systems related to practice; while emergent AR focuses on changing social practice within a socio-technical system or technological innovation. Either version could be used to study e-CRM; however it seems that the emergent perspective may be more useful to study the communication that takes place between business personnel and consumers. AR offers a possible avenue for intervening through iterative prototyping of e-CRM systems, interfaces, and processes over time to learn from the experience of actual consumers and business personnel. In this way theory may emerge through out the study through discovery and experience.

Theories of usability will have to be extended to included newly emerging factors such as web site accessibility [166–174] and web site appeal or visibility [146,175,176]. Although models such as TAM [177,178] have been extended for the web [179], perhaps new theories or extensions will be required for consumer behavior

[112,115,116,180–182], interactivity, and accessibility. IS research in these areas is just beginning and there is significant work yet to be done to test and extend existing theory and develop new IS-based theories.

6. The e-CRM model

We assert that much as Keen [10] and Körner and Zimmermann [66] stress, the five research areas are not mutually-exclusive and in fact influence one another and the process and outcomes of e-CRM research and practice. Figure 2 presents our high level conceptual framework based on the five areas.

It illustrates several important notions about e-CRM. First, all five of the research areas influence e-CRM research and practice. Second some areas are more closely related to each other than to others. For example, markets are most likely influenced by and have more influence on human factors and business models, than knowledge management or technology [55,71–73,124,183]. Similarly, human factors are more influenced by technology and markets, than by business models or knowledge management [110,184–189]. In reality all of the areas influence each other directly or indirectly in some way. While this model is instructive, it does not consider the process or the outcomes of e-CRM research and practice.

Figure 3 presents our input-process-output model that serves as a theoretical framework for the study of some of the variables that we posit influence e-CRM processes and outcomes. Such a framework is useful because the areas and associated constructs, variables, and measures that can be derived from them can serve to guide future research into e-CRM. Adoption of such a framework by researchers can enable the e-CRM com-

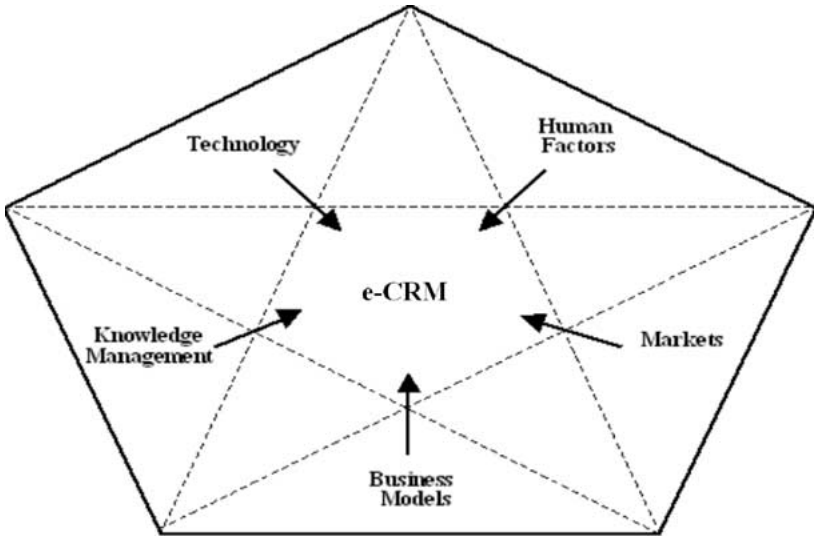

Figure 2. e-CRM research framework.

munity to compare and contrast the results of different studies and to build a cumulative tradition of research that over time may reveal patterns and common findings.

The model consists of five input variables, representing each of the five areas, and e-CRM processes and outcomes. The combination of these five input variable categories captures the human participation, economic environment, strategic considerations, technical infrastructure, and intellectual capital components of e-CRM. e-CRM processes are continuous and evolutionary in nature, just as are the relationships they attempt to foster and manage for mutual gain. Feedback loops in figure 3 illustrate that e-CRM outcomes can result in learning for both customers and enterprises. Both types of outcomes – performance and non-performance – are important. Non-performance outcomes may have significant negative or positive impacts on performance outcomes, much as they have been shown to affect outcomes in GSS research [190].

These general variable categories are consistent with models presented in other areas of IS research such as GSS and KM [94,97,119]. Together these input variables define both the human potential and the technical infrastructure for developing e-CRM processes to achieve valuable outcomes. The e-CRM process is continuous and evolutionary and consists of organizational members and individuals from outside the organization using e-CRM technologies to establish, develop, and maintain important successful business relationships, which are the outcomes of the process that are relevant to e-CRM. Within each component of the model a list of example concepts is provided to be illustrative and not exhaustive.

We believe that these five fundamental areas and the influences they have on one another and e-CRM processes and outcomes encompass some of the most important ar-

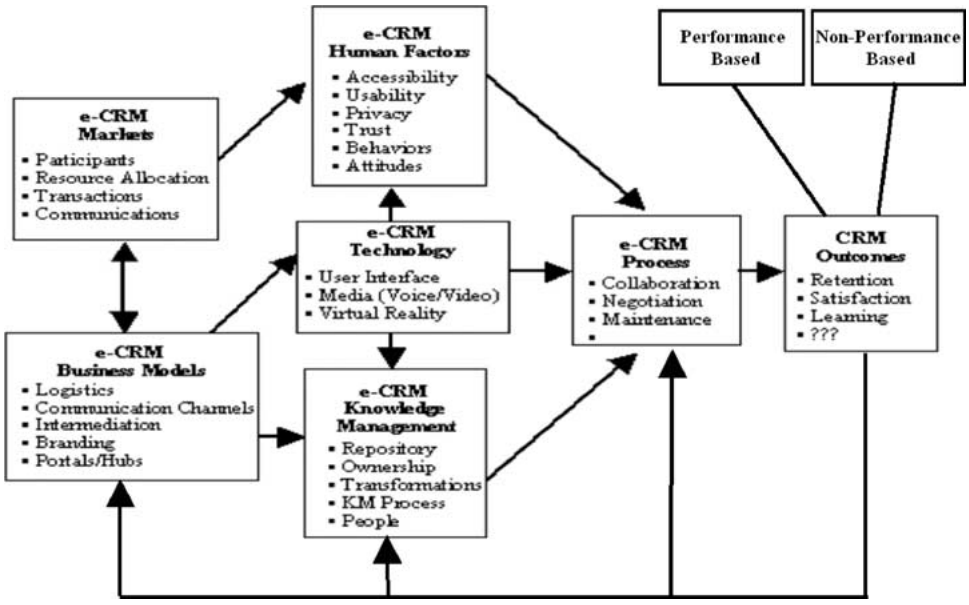

Figure 3. Model of e-CRM influences.

eas for e-CRM research. We assert that this model can stimulate researchers to consider important research questions and design additional theoretical and conceptual models and empirical studies to constructively extend the sub field of e-CRM.

One last point that we think is important to mention is that e-CRM assessment should be done from both process and outcome perspectives. There is a strong body of literature that emphasizes the importance of mixed-method evaluations for IS research projects [191–200]. We assert that e-CRM researchers should plan to assess research projects through combined process and outcome evaluations. The outcome evaluation should be mixed-method and measure both performance-based and non-performance-based e-CRM outcomes. "*Beyond assessing whether a treatment is effective, we need to understand why it is effective if we are to learn ... how treatments might be improved*" [196]. Process and outcome evaluations are not competing, but complementary, such that process evaluation increases the interpretability of the results of the outcome evaluation.

Researchers [194,201–203] have suggested the use of mixed-method designs that include both qualitative and quantitative evaluation methods. For the purpose of studying e-CRM, we suggest that researchers consider the use of a mixed-method study with an expansion intent. This multitask design was first proposed by Cook [204] and includes multiple components with the objective of expanding both scope and breadth. This method is commonly employed by using qualitative methods to measure processes and quantitative methods to measure outcomes. Although there has been some debate as to whether mixed-method designs using both qualitative and quantitative methods are meaningful the recent trend is toward a combination approach [205–207].

7. Conclusion

e-CRM is a research topic on which there is much literature [11,12,208], but no overarching framework to guide and focus IS research in this area has yet emerged. We have presented research questions, constructs, variables, and topics derived from our framework in figure 2, from our model of influences in figure 3, and from an exhaustive literature review in the area [11,12] to illustrate the vastness of the e-CRM research domain and stimulate researchers to ask more meaningful research questions and study more useful relationships within and among these five areas. Thus, the issues we have raised have both theoretical and practical significance, and reflect a useful starting off point for e-CRM researchers. The specific variables in each category of our framework are not exhaustive, but reflect factors what the literature suggests are most likely to be relevant to e-CRM research and implementation. Research questions can be raised according to the major framework components. In this paper, we propose a research framework for e-CRM composed of five underlying research areas and a model of how these five areas influence one another and both the process and outcomes of e-CRM.

The unique contribution of this paper is its focus on e-CRM research from an IS perspective. The research framework provides a foundation for important questions to

study, and points to key constructs whose operationalization will add value to this research area. The integration of the five research areas provides a novel approach to examine the emerging area of e-CRM. Finally, the notions of e-CRM processes and outcomes being affected by the five research areas provides a direction for theory development and empirical study in both lab and field settings that may yield meaningful and useful results with both theoretical and practical implications.

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